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With Compliments of the Authors.

CONCUSSION OF THE SPINE IN ITS
MEDICO-LEGAL ASPECTS.

Read in the Section of Surgery and Anatomy at the Fortieth Annual Meeting of the American Medical Association, held at Newport, June 25, 1889.

BY
HENRY HOLLINGSWORTH SMITH, M.D., L.L.D.,
OF PHILADELPHIA.

also
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BY HERBERT JUDD, M.D.,
OF GALESBURG, ILL.

WITH DISCUSSION.

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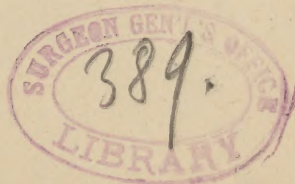


CONCUSSION OF THE SPINE IN ITS MEDICO-LEGAL ASPECTS.

BY HENRY HOLLINGSWORTH SMITH,
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OF PHILADELPHIA.

The legal liability of Capitalists and Corporations to be charged with claims for pecuniary damages in cases of injuries received by individuals through a claimed negligence, was established by the English Parliament in the year 1846, and is widely known as Lord Campbell's "Liability Act." Somewhat similar statutes were subsequently enacted by the State Legislatures of this country, and this responsibility on the part of carriers and employers is generally regarded as wise and tending to the proper protection of life and limb.

In Great Britain the "liability act" is the same throughout the Kingdom, but in the United States it varies somewhat in different States, especially in the amount of damages that can be claimed. In Michigan the limit of a claim is fixed at \$5,000; in New York it is \$10,000; in Mississippi it is such compensation as shall be deemed fair and just in reference to the injury sustained by the plaintiff. In Tennessee it includes mental and physical suffering, loss of time, necessary expenses of the deceased and damages to the beneficiary, but in Pennsylvania, since the adoption of the new Constitution, there is no limit. In one case, in Philadelphia, the loss of a leg by a newsboy on a passenger railway was assessed by a jury at \$18,000; appealed to the Supreme Court, a new trial was ordered and



a verdict for \$20,000 given, and this verdict has been paid. Another child, 8 years old, was awarded \$16,000 for injuries caused by tripping over a stone left on the sidewalk by the City Corporation, and very many other cases could be cited.

So generally is this liability for injury caused by negligence, admitted, that most corporations or employers do not hesitate at a prompt settlement of a just and reasonable claim, being influenced thereto not only by a proper regard for the suffering induced, but also as an acknowledgment of "the Majesty of the Law," it being now a well-settled principle "that they are liable for past and future physical and mental suffering, together with the loss of earning power where the consequences are such as in the ordinary course of nature may be reasonably expected to ensue."¹

It is, therefore, not unusual for conductors, foremen, or other servants of corporations, to be instructed in the event of injuries received, to do all that is possible to ameliorate the sufferer's condition. Many companies have also surgeons regularly employed to render immediate professional attendance.

A recent example of the disposition of a corporation to promptly relieve suffering and settle a just pecuniary demand for injuries received in transit, is shown by the action of the Lehigh Valley Railroad, of Pennsylvania, where, after an accident to an excursion train at "Mud Run," in October 30, 1888, in which 63 persons were killed and over 80 others wounded, the company made a prompt and amicable settlement with most of the claimants, at a cost of over \$150,000, though the Coroner's Jury, after a rigorous examination of the case, failed to report any want of care or proper vigilance on the part of those in charge of the train.

Under the "liability law" a refusal to pay what may be regarded as a doubtful or extravagant

¹ Patterson, "Railway Accident Law," Philadelphia, 1886.

demand, usually carries the claim into Court and confides it to the judgment of a not over-intelligent jury, who often appear to have an innate prejudice against all corporations or capitalists. In these cases the medical testimony as to the nature and probable result of the injury claimed to have been received, becomes often the turning point on which a just award can be given. The medical expert then, who correctly appreciates his responsible position, should keep himself thoroughly abreast with the progress of science and endeavor to exercise such judicial power as will enable him to hold the scales of justice so level that the preponderance of the medical facts once established, may correctly incline the balance to the right side and lead a jury to a true and impartial verdict for that side to which it properly turns.

As many corporations have surgeons regularly engaged to serve them in these accidents, it is desirable that the correct position of such experts should be clearly defined, and the following judicial opinion on the "relation of scientific experts to the administration of the law," has recently been so well expressed by a Judge of the New York Supreme Court² (in regard to these duties and relations), that I repeat them in a condensed form. "In an action for damage," says Judge Willard Bartlett, "arising from accidents on railroads, the respective parties are often assisted by Surgeons, who testify to the nature, extent and consequences of the plaintiff's injury, and also often advise counsel as to the conduct of the surgical part of the case. A wise doctor should, however, take care not to act in both capacities. If he testify, he should not act as assistant counsel, and if he acts as assistant counsel he should keep off the witness stand, because he will naturally become prejudiced in favor of the party in whose service he is acting, and the jury will regard such a wit-

²*Judge Willard Bartlett* at the 61st Meeting of the New York Society of Medical Jurisprudence and State Medicine. New York, March 14th. (From the Philadelphia Evening Telegraph, March 25, 1889.)

ness as prejudiced and his testimony as that of a partisan, thus materially detracting from the force and effect of his evidence. The attitude of the physician called as an expert, should be as nearly as possible one of entire impartiality as between the litigants," Judge Bartlett also says, "I have every reason to believe that cases are not unknown in which the plaintiff's counsel have said to a physician, 'I think my client's injuries are serious. Go and see him for me. If you find that he is not seriously hurt, I shall not expect you to charge me anything for making the examination, but if you conclude that his injuries are incurable, I will call you as a witness and pay you handsomely.' As this is manifestly incorrect, no such proposition would be accepted by a really honorable professional man of high character."

Unfortunately for justice, the medical testimony is often so conflicting that neither Judge nor Jury can properly estimate it. This diversity of opinion is sometimes due to the want of a proper study of a case, or, the varied experience and moral tone of the expert (and his views of right and duty between man and man), as well as to the fact that the science of medicine being always progressive, there is no fixed point on which an expert's opinion can be securely based, and *Page* has well said,³ "there must ever be differences of opinion in matters so difficult as the investigation of disease, but it is wholly possible to be impartial," whilst *Erichsen* says: (2) "Conflicts of opinion on certain points are creditable to the independence of thought and the individual self-reliance that characterizes professional opinion."

The progress of microscopical, physiological or pathological studies of tissues, especially of the nervous system and the regional localization of the functions of the brain and Spinal Cord, which are peculiarly liable either directly or indirectly

³Injuries of the Spine and Spinal Cord without Apparent Mechanical Lesion and Nervous Shock, by *Herbert W. Page*. Second Edition, London, 1885.

to be affected by these injuries, also tends to show that the professional opinions held twenty years since are now in many points incorrect and unreliable and those of *Mr. Erichsen* on "Railway Injuries and Concussion of the Spine," once often quoted, are mistrusted by many, who deny the correctness of his terms and object to his combination of different injuries under the one title of "Concussion of the Spine."

As every period of Court in our large cities presents one or more claims for personal injury, in which the results of concussion of the spine are often presented in an exaggerated form by Counsel (in what has been well designated as "Litigation Symptoms") to cover or sustain claims that could not otherwise be established as of sufficient magnitude to justify punitive or exemplary damages, it becomes important to settle, if possible, whether the so-called "Concussion of the Spine," "Railway Spine," or "Railway Brain," can exist, and if so, whether the so called "Railway Spine" presents a special train of symptoms differing in any point from those induced by other forces than railway collision, and although many local societies and individuals have for years investigated these cases and their results, I desire now to present the question for the discussion of this Section in order to elicit a wide expression of the sentiments of those who here represent the surgical skill of the whole United States.

It is unfortunate that the consideration of the subject of "Concussion of the Spine" should be so much handicapped by the legal aspect given to it in the cases presented in claims in court; these cases frequently offering less marked symptoms than those met with in hospitals or private life where there is no prospect of the sufferer receiving an award from a jury. Formerly such claims could not be presented by *employés* and suits by them were rare. Thus prior to 1871 the German railroads were not liable for injury to their *employés* and the latter, being anxious to keep their

places and gain their living, managed by an energetic effort of the will, to overcome and control their nervous condition; but as soon as the laws of Germany made corporations liable to their employés, the number of suits instituted from 1871 to 1876, on one railroad only, was at least nine times larger than before. Thus in fifteen derailments before 1871 there were but two injuries leading to claims for disability, whilst subsequently to 1871 seven derailments occasioned eighteen lawsuits.⁴

In all suits for damages for concussion of the spine it should be recollected that *fraud* on the part of a claimant is quite a common item in the legal investigation of this injury, and thus *Page* reports⁵ "234 cases, in a large majority of which there was either fraud or an exaggerated claim, as proved by subsequent history. *Hodges* reports,⁶ that "in 21 cases where so-called symptoms of concussion of the spine were alleged to be present and were under his personal care, 10 are believed to have been proved deceptions; whilst in 6 a diagnosis as to deception was doubtful. Of 28 similar cases reported by *Rigler*, 7 were found to be simulated and in 13 the diagnosis in regard to fraud was doubtful. Of these 49 cases, 36, or three-fourths of the whole number, were really or probably deceptions." *Hodges* also cites⁷ the following cases illustrative of fraudulent claims and unjust awards by juries.

"In 1872 the Metropolitan Railroad, of Boston, Mass., was mulcted by a jury in a sum of \$10,000 in the case of a man whose detailed symptoms satisfied them that he was utterly enfeebled in body and wholly unable to earn his own living. At the close of the trial the plaintiff celebrated his victory by becoming uproariously drunk, and it required the united strength of three policemen to take him to the Station House. In another

⁴ *R. M. Hodges, M.D.*, Boston Medical and Surgical Journal, April 14th to 21st, 1881, page 363.

⁵ *Op. citat.* Appendix, p. 296.

⁶ *Op. citat.*, p. 363.

⁷ *Op. citat.*, p. 364.

suit in which there was a claim of impotency resulting from the injury, the jury expressed their sympathy by a verdict of \$18,000, yet not long afterwards the man was convicted of bastardy."

Judge Wilson, of the Court of Common Pleas, Philadelphia, also says,⁸ "I have in my mind a case where a very badly injured person was *substituted* at the trial and large damages obtained, whilst the real plaintiff was not injured at all."

The following case in my own practice illustrates an exaggerated claim and the liability of a surgeon to be deceived, either by a malingerer or hysterical man, when he places faith in the subjective symptoms presented by the claimant and apparently seconded by circumstances.

Case.—W., age 35 years, married, in full health at the time of the accident, claimed injuries from colliding trains at Havre de Grace, P. W. & B. road, on June 21, 1887. On Sept. 14, 1887, about three months subsequently, he exhibited three scars, one deep in the forehead and left eye-brow and a deep scar on the left of the upper lip, which he stated were the result of blows. He also exhibited a superficial scar from a wound on the inside of the right knee, not penetrating the joint; the patella bursa of this knee was also swollen, and he claimed to have been struck in the back, receiving a dark bruise that extended from the top of the shoulder to near the right hip. Of this bruise there was, on September 14th, no evidence, but there was apparent nervous disturbance, his right arm seeming to be paralyzed in motion and sensation, though his grip was fair. His memory, he said, was enfeebled, and he denied knowing what he had eaten for breakfast on the day of my examination. He also reported having been insensible for nearly four hours after the blow; that he was taken by train to Washington, D. C., and treated there; but that subsequently he was well enough to travel to Maine to escape the heat of the summer, and was improved by the trip. After full consultation with his family physician (Dr.

⁸ Philadelphia Daily Times, June 7, 1889.

Mecray, of Camden, N. J.), I reported to the railroad company that he had received the above injuries, but that the permanent disability claimed was not sustained by the evidence, as he was then apparently recovering. This opinion not being satisfactory to the plaintiff's lawyer, I was again requested to make a survey and report, on September 22, 1887. After a second examination and consultation with Dr. Mecray, I reported a slight improvement in the power and sensation of his limbs, as he now walked downstairs to his parlor and walked there with slight assistance, dragging his right foot a little and with his right arm drooping. His mind was also clear and he recalled events during his stay in Washington, D. C. I therefore gave an opinion, renewing my former statement, and mentioned the benefit apparent from his physician's treatment; that the patient complained of the tediousness of his confinement and was anxious to return to work, and that his doing so would probably advance his recovery.

Two months after this (November 11, 1887), Dr. Mecray wrote me:

"You will remember on your second visit to Mr. W. we were both inclined to give a favorable prognosis, as he was then able to walk about the house, to take moderate exercise, and was free from suffering, except from neuralgia of the left side of his head. Since then there has been a marked increase in the unfavorable symptoms." (The settlement of his extravagant claim for damages, \$15,000, was now becoming doubtful, the claim being for permanent disability.) "The paralysis of the right side," said Dr. Mecray, "has much increased, the right arm is entirely helpless, with the exception of a slight grip of the hand. The power of the right leg is totally gone, and there are no reflexes whatever. The urine dribbles from the bladder, the bowels are constipated, though under his control; vision in the left eye and hearing in the left ear are now much impaired; in fact I look upon his case as one of '*progressive*

and permanent paralysis,' the result of pressure upon his spinal cord, possibly a breaking down of some of its tissues. His memory, I think, is slightly improved. He is confined to his bed and I fear will end his days there. Dr. D. Hayes Agnew, of Philadelphia, has seen him with me and concurs in my opinion. If you have any suggestions I will be pleased to hear from you." [Signed, A. M. MECRAY.]

On November 12, 1887, I again visited Mr. W., and had a third consultation with his attending physician, reporting to the company "that since my former visit from some unexplained cause Mr. W. had greatly deteriorated in health. For some weeks he reported himself unable to leave his bed for any purpose and is now apparently suffering, as his physician states, from "progressive paralysis." He has no motion in either arm, except in his fingers, nor is there motion in the lower right limb. Sensation on the right side is nearly destroyed, he giving no shrinking from the puncture of the skin by a pin thrust in till it brought blood. The left limbs are sensitive. His bladder is partially paralyzed; his urine dribbles from him, and he uses a bed-pan to evacuate his bowels, being unable to rise. He is very tremulous and nervous, with depressed circulation and more mental aberration." With this report I forwarded to the company the suggestion of delay in the settlement of the claim as the patient's condition, though then unfavorable, might be improved by time. Whilst giving much weight to the opinion of his physician, who saw him daily, I was yet unable satisfactorily to account for the deterioration in his condition, the respectability of his domestic surroundings and his own standing precluding the idea of malingering. The possibility of hysteria, as claimed by Charcot in such cases did not occur to me at this time. With this evidence from his medical attendants, his claim was abated and compromised by the company on January 19, 1888, for \$8,500. Six months subsequent to this, being doubtful of the result of his case, and de-

sirous of satisfying myself of his ultimate condition, I wrote to Dr. Mecray asking his report to date, "for the cause of science," and on the 11th day of April, 1889, was informed by him that on *the day after the payment of the claim* Mr. W. arose from his bed, travelled to Washington, and in a few weeks was able to attend to his usual avocations. Was this a case of successful malingering, or was it paralysis from hysteria? It certainly was not, as supposed by the surgeons, "progressive paralysis;" though closely resembling it.

Admitting the liability of a surgeon to be misled in his Diagnosis and Prognosis of cases claiming to be the result of spinal injuries, it may be asked, 1st. Can any force be so applied as to produce a concussion of the spinal cord? 2d. How are the normal functions of the cord disturbed by such injury? 3d. What pathological changes in the cord result from its concussion?

1. Can any force be so applied as to produce concussion of the spinal cord and its nerves? Concussion of the spinal cord from any violence sufficient to disturb its functions, whether by falls, blows on the back, or shaking and collision or derailment of cars, must be admitted as *possible*, as it is now demonstrated by post-mortem examination; but the violence must be greater than that sometimes created in coupling a locomotive to a train, claims for which I have frequently known to be made.

2. How are the normal functions of the cord disturbed by such injuries? Disturbance of the normal functions of the cord, or the symptoms of its concussion, can be recognized by evidences indicating a modification of normal cessation or motion in varied degrees as shown through the peripheral nerves. H. Fischer has recently suggested that the condition known to surgeons as "*shock*" is a traumatic reflex paralysis of the vascular nerves, the "*concussion of the brain*" being simply a shock localized in the brain, a traumatic reflex paralysis of the cerebral vessels,

and *V. Schöle* applies this view directly to "concussion of the spinal cord." *Erb*, however, regards the symptoms of concussion of the cord as due to "molecular disturbance, and thinks this is the chief element in its concussion."⁹

Reference to the normal action of the cord best illustrates these symptoms.

According to *Erb*¹⁰ "all impressions made in any way on the peripheral nerves are conducted to the posterior or anterior roots of the spinal nerves and pass thence into the lateral columns of the cord and thence to the brain, as touch, temperature, tickling, etc. The sensation of *pain* is conducted exclusively by the gray substance of the cord. The *sensory* impressions decussate in the cord and medulla oblongata and *voluntary* movements pass *from* the brain to the cord, through the decussation at the pyramids, medulla oblongata and pons varolii."

The seat of the coördination of *movement* is not settled, but is supposed to lie only in the brain, the cord only transmitting the coördinate impulse to the muscles.

The centre of *vaso motor innervation* lies in the cord and medulla, and Charcot says, "the nutrition of the peripheral nerves, muscles, bones, joints, skin, hair, nails, etc., is dependent on the action of the spinal cord," and of course these are impaired by its injury.

The disturbance of the function of the cord by injury or disease will, therefore, be noted (*a*) in disturbance of the normal *sensibility*, as anæsthesia, hyperæsthesia, paræsthesia; or abnormal sensations, as pain, either lancinating or neuralgic; (*b*) in disturbance of *motility* as shown in weakness or paralysis, or ataxia; or by increased motility, as in spasms or twitching; (*c*) vaso-motor disturbance will be shown, in hyperæmia, increased redness with elevation of temperature and modified sensation, as in the old "*rubor, dolor,*

⁹ Volkman's Sammlung Klinische Vorträge, Nos. 10 and 27, as quoted by Erb.

¹⁰ Erb. Diseases of the Spinal Cord, p. 352, and from this monograph much that I have stated is condensed.

calor" of inflammation, accompanied often by modified nutrition of the tissue affected.

3. What pathological changes in the cord are found as due to its injury or disease? Pathological changes may be noted first, in the disordered action of the blood-vessels concerned in the nutrition of the membranes and of the cord as (*a*), congestion or hyperæmia; hæmorrhages or effused blood; inflammation of the membranes or of the component cells of the spinal cord; (*b*), in anæmia; or we may have myelitis followed by softening or sclerosis; or (*c*), there may be changes due to malignant diseases or tumors, omitting all reference to changes from mechanical action, as wounds, fractures, or luxations of the bones forming the spinal canal.

The disturbed function of a spinal cord may, however, also be "due to a diseased or neuropathic disposition, either inherited or acquired, as by sexual excesses, which are common; exposure to cold and wet; intoxication; syphilis; excessive exertion and overtaxed muscle; acute diseases, as the exanthemata; fevers and pneumonia," so that in studying the results claimed as due to a concussion of the spine from injury, and especially in litigation cases for damages, too much care cannot be exercised in obtaining a full and correct history of the claimant *before* the accident and in a careful analysis of the subjective symptoms, so as to prove that the injury did not create them. If the disturbance is *functional* it can be cured and there may be no permanent disability. When a claimant is impecunious and seeks to repair his fortunes by a demand on a corporation or capitalist, the expert should carefully eliminate all symptoms not evidently free from the disorders of the spinal cord due to preëxisting diseased conditions, or show to what extent the accident was connected with them.

As Neurasthenia or *functional* disorder of the cord can produce all the symptoms often ascribed to violence, may we not doubt the correctness of Erichsen's opinion¹¹ in ascribing such symptoms to

"concussion of the spine." Such doubts are daily becoming more numerous, and the varied nervous symptoms alluded to by him are assigned by more modern authorities to other causes. Thus Charcot says:¹¹ "The obstinate symptoms resulting from railway injuries are *hysteria* (or hysterical) and nothing else," and hysteria, according to Dr. Ozeretokofski, of Moscow, "is by no means an exceptional occurrence in men, presenting the same diversities in them that it does among women;" he having studied no less than thirty-eight cases in the Moscow Military Hospital.¹²

The correctness of the opinion that concussion of the spine is common and creates special symptoms, has also been doubted by others; thus *Bramwell* says:¹³ "Whilst I am not prepared to deny the occurrence of simple concussion of the spine, I am disposed to doubt whether organic disease can or does result from it. Indeed, everything seems to show that when disease of the cord results from external violence, the disturbance of its functions depends, from the first, on definite and distinct alterations of structure; and there is good reason for supposing, that undoubted and severe disturbance of the spinal function *rarely* results from violence; the ordinary type of chronic disease of the spinal cord very rarely following railway concussion. Nothing in the whole range of inquiry stands out more prominently than the fact that the lesions which become the subject of medico-legal inquiry, are met with only in a *few* isolated cases."

Page says,¹⁴ "In fact, serious and undoubted derangement of the functions of the spinal cord as the result of simple concussion of the spine, is probably rare; whilst cases in which the symptoms of spinal shock do not appear for weeks or

¹¹ On the Concussion of the Spine, Nervous Shock, etc. By John Eric Erichsen. Revised Edition. New York, 1886.

¹² *Léçons sur les maladies du système nerveux*, par Charcot. Paris.

¹³ *The Lancet*, February 16, 1889, as quoted in N. Y. Med. Record, May 4, 1889, p. 504.

¹⁴ *Bramwell* on Injuries of the Spinal Cord, p. 305, 12, 13, 19.

¹⁵ *Op. citat.* p. 107.

months after an accident, are *exceedingly* rare." He also remarks, "that there is no evidence that the victims of railway collisions, numbering thousands, have afforded a larger proportion of the degenerative conditions of the cord which have for years engaged the searching attention of pathologists, than those members of the community who have not suffered the same influences. There is no evidence that they have," *Bramwell*¹⁶ says, "I think the chronic diseases of the cord claimed to be developed by railway collisions are infinitely more *rare* than has hitherto been supposed." *Reynolds* describes¹⁷ "cases in which a patient has no intention to deceive, but really believes that he is the victim of serious organic disease. He is usually of a highly nervous temperament and often very active, mentally. His fixed belief *induces* functional disturbances, as twitching, muscular pain, excitable action of the heart, palpitation, exhaustion after slight exercise, and he becomes impressed with the idea that he is unable to do anything; that he is paralyzed and that he cannot sleep, awaking unrefreshed." Such cases I have often seen.

Reynolds' opinion and my own corresponds with that of Charcot and also of Grasset, who has described such cases¹⁸ "as hystero-traumatism or nervous affections sometimes resulting from wounds." *Knapp* says,¹⁹ "Whether there is a true concussion of the spinal cord is still a matter of doubt. I mean a paraplegia following injury, where the cord has sustained no coarse mechanical lesion, where molecular changes in its finer nerve elements have occurred, giving rise to immediate and complete functional paralysis."

Although this evidence shows doubts as to the results often claimed as those of spinal concussion, it has been recently demonstrated that the spinal cord may be occasionally so shaken as to ul-

¹⁶ *Op. citat.*

¹⁷ Quoted in *Bramwell*.

¹⁸ *Léçons sur l'Hystero-traumatisme* par Grasset. Paris, 1889.

¹⁹ *Nervous Affections following Injury*. By Philip Coombs Knapp, p. 5. Boston, 1888.

timately induce molecular changes in its structure without any injury to the canal, this being proved by post-mortem examination and the investigation of the minute structure of the cord under coloring, hardening and microscopical sections; but such cases are certainly very rare.

As muscular nutrition is dependent on a proper nerve supply, its deficiency will indicate such changes in the cord as atrophy, softening, etc., and Gower in his recent work says,²⁰ "Any destruction of the nerve cells will also cause degeneration of the motor fibres proceeding from those cells, with wasting of the muscles to which these motor fibres proceed." Hence, injury to the spinal cord should always be indicated by muscular atrophy in a more or less marked degree, and when no change is noted in the nutrition of the muscles, doubt may well exist in the mind of the expert as to there having been any concussion of the spinal cord.

A demonstration of the muscular development and power of a claimant may then well be made to a jury, in explanation of the condition of the plaintiff's nerves claimed to be impaired by the concussion. *Gower* also states that "Visceral control especially of the bladder and rectum (though the latter is sometimes under the immediate control of the branches of the sympathetic nerve), is also related to centres in the spinal cord, and although the action of the bladder and rectum can to some extent be controlled by the will of the patient, yet the latter cannot control the reflex processes when the volitional path in the cord is interrupted above the lumbar centre."

When the damage to the cord also involves the sensory tract, the claimant may be unconscious of the state of his bladder and the urine will dribble away. Pain in the spine, which is often spoken of by a patient, is no evidence of concussion of the cord, as it is occasionally present in organic

²⁰ Manual of the Diseases of the Nervous System. By W. R. Gower, M.D. American Edition. Philadelphia, 1888, p. 130 *et supra*.

disease of the cord, and more frequently in cases of disease of the meninges or bones.

Page regards this pain in the back, so often claimed as a symptom of concussion of the cord, as being due to the strain of the muscles or ligaments of the spinal articulations, and not necessarily indicative of cord injury. *Gower* says "softening of the cord is common; derangement of its functions few and rare. A severe concussion of the cord may cause instant and grave damage usually by hæmorrhage, or it may cause no immediate effect and the symptoms appear at the end of a few days and progress rapidly or slowly." It is therefore apparent that in such cases, symptoms of injury to the cord should be found *soon* after the accident and not (as is sometimes claimed by lawyers prosecuting a claim) several months after the occurrence.

Hodges states: "It is characteristic of concussion of the spinal cord, that its phenomena are *immediate* though the recognition of them may not be equally prompt."

The development of an injury from spinal concussion should therefore be specially studied in reference to the *time* after the accident when the claimant first begins to complain. This time should be a few hours or days after the injury, and not weeks subsequently, when his mind, by dwelling on the accident and being posted as to the symptoms of successful awards made in other claims, has induced that emotional, hysterical or decidedly fraudulent condition of the body and mind which constitutes malingering.

POST-MORTEM EXAMINATIONS IN CONCUSSION OF THE SPINE.

The following cases illustrate the pathological conditions noted in well developed concussions of the spine, and prove that such an injury though rare, is possible:

In the *Canadian Medical and Surgical Journal* for Oct., 1884, p. 156, *Dr. J. Campbell*, of Seaforth, Ontario, states, "That serious and even fatal ef-

fects arising from injuries of the spinal cord even when it has not received any direct injury, is proved by a case reported by *Dr. Edmunds* in the current number (October, 1884) of the journal "*Brain*," where a soldier struck in the back by a bullet which entered three inches from the spine, immediately fell, was carried off the field, and was found to have lost complete control over both of his lower extremities, with paralysis of the bladder and rectum. Cystitis and a bed-sore over the sacrum supervened and he died five months after the injury. The autopsy showed that there was no fracture of the vertebræ; that the theca vertebralis was intact; but the spinal cord was found much atrophied and softened about the level of the wound. On hardening the cord in Müller's fluid, universal myelitis was noted, with softening for about two inches opposite the wound; this gradually passed downwards into sclerosis of the lateral and anterior pyramidal tracts and upwards with sclerosis of the posterior median columns. There was no indication of hæmorrhage, either internally or externally in the substance of the cord, and its surface was uninjured."²¹

A marked illustration of a similar pathological condition showing that degenerative changes in the cord do sometimes, though rarely, follow concussion, has been kindly furnished me by my friend Dr. Arthur V. Meigs, of Philadelphia, one of the Attending Physicians of the Pennsylvania Hospital. As the details of the case, with its microscopical illustrations, have not yet been published by Dr. Meigs, I give his account of it from a letter recently sent me:²²

A sailor, 35 years of age, was admitted into the Surgical Wards of the Pennsylvania Hospital August 20, 1888, and died September 15 of the same year.

History.—During a storm ten days before his

²¹ I am indebted to *Dr. Campbell* for a written account of this as I did not have access to the printed report in the Journal. The report was made to the Medical Association of Ontario and printed in their Transactions.

²² MS. dated April 26, 1889.

admission to the Hospital, he was struck by a wave and dashed against the bulwarks, striking the back of his head and neck against the rail. On being picked up it was at *once* found that he had lost all sensation of power and motion from the clavicles downwards, and that he had retention of urine. When admitted to the Pennsylvania Hospital (ten days after the accident) he had a large bed-sore on his back. His temperature varied from 100° to $103\frac{3}{5}^{\circ}$. Examination of his urine showed nothing abnormal, and there was no violence or signs of fracture or luxation of the vertebræ. He was treated on a water-bed; a poultice was applied to his chest because sonorous râles were heard on examination of his lungs, and iodide of potash was administered. The râles increased in his chest until the lungs were full and he became unable to expel the secretion; abdominal tympany supervened and he became comatose, dying apparently of heart failure. The autopsy showed that there was neither luxation nor fracture of the spine, and though the spinal cord was carefully examined at various points by the unaided eye, no sign of its diseased condition was noticed. The cord was then placed in Müller's liquid²³ for hardening and microscopical examination. After having been thus preserved in the fluid for a few weeks, the gross evidences of disease became very manifest and the histological appearances still more so; the lower part of the cervical swelling being almost disintegrated, there being at this point an almost complete transverse myelitis, the greater part of the tissue consisting of the so-called granule-cells with swollen and extended fibres; corpora amylacea and large nucleated cells that stained very red with carmine; whilst there was much space apparently empty, which had been probably filled with albuminoid material or liquid, for if this had not been the case the tissue would have collapsed instead of hardening in Müller's fluid. Above this region

²³ Müller's liquid consists of 2 to 2.5 parts of potassium bi-chromate, 1 part of sodium sulphate, and 100 parts of water.

there was marked secondary degeneration, the section being taken only a short distance above the myelitis, though this was general in a slight degree throughout this portion of the cord. But in a part of the posterior columns, it amounted to a complete destruction of the nerve fibres. Below the region of the myelitis there was descending degeneration of the lateral pyramidal tracts, this extending downwards into the lumbar region. These areas of degeneration were very evident to the naked eye after the cord had been in Müller's fluid, the degenerated part of the white substance of the cord having taken a yellow color, exactly similar in shade to that taken by the gray matter, while the portions of the white substance that remained healthy were of a greenish hue." My examination of some of the sections fully confirmed Dr. Meigs' description of the pathological changes.

That diseased molecular changes in the structure of the spinal cord have been occasionally seen without apparent mechanical injury, is shown in the following case, reported²⁴ by Dr. Wm. Hunt, of Philadelphia, "where a gentleman who traveled very frequently in railroad-cars, but never received any injuries as the cause of his disease, began to complain of pain in the posterior root of the neck. Paralysis, at first of the upper and subsequently of the lower extremities, was developed, and within a year he died, and the autopsy revealed spinal meningitis, with softening and destruction of the cord to the extent of $2\frac{1}{2}$ inches in its brachial enlargement. As there was no other cause known, it seems as if $2\frac{1}{2}$ inches of the spinal cord had been softened and atrophied without any mechanical cause;" yet if this man had received even a slight jar and presented such symptoms, his autopsy might have indicated "Concussion of the Spinal Cord." There are some persons who believe it possible to impair the functions of the cord, and even induce paralysis, from the jars

²⁴ "System of Medicine," by Pepper. Vol. 5, page 915, Philadelphia, 1886.

created in the spine by constant travel; but if this were true there ought to be very many instances of it found in commercial travellers, none of whom are known to thus suffer. Nor is it true of such men as engine drivers on express trains, who are more exposed to jars on a locomotive than would be the case in a passenger car, and I am assured by an experienced General Superintendent of one of our largest railroads, that engine drivers do *not* show any evidence of concussion of the spinal cord after years of service on express trains. Constant travel as the cause of spinal degeneration is, therefore, not proven.

CONCLUSIONS.

1. Concussion of the spinal cord is no longer a matter of doubt, but may sometime occur as the result of various forms of violence, their being nothing peculiar in the application of the force to the body, as the result of derailment or collision of railroad trains.

2. The pathological changes noted in the molecular structure of the cord as the result of shaking, jarring, or so-called concussion of the cord, when attended by paralytic symptoms, may be due to a hæmorrhagic effusion, or be shown post-mortem, in softening and localized or limited atrophy. In cases due to hæmorrhage, the symptoms may be improved by judicious treatment, and permanent disability prevented.

3. The possibility of preëxisting neurasthenia or hysteria or fraud on the part of a claimant, should be carefully noted in forming a *diagnosis* in these cases.

4. As the question of permanent disability justifying exemplary damages is frequently raised in claims of the kind alluded to, it should be recollected in forming a *prognosis* that numerous cases are reported of recovery or marked improve-

ment in a few weeks, and one in three years even, after the occurrence of paralysis.²⁵

5. No physician should go into court and swear that a plaintiff has had a concussion of the spinal cord, or of its nerves, unless he has proved the disturbance of the normal functions of the cord, as shown in sensation or motion or both, and that the symptoms appeared *soon* after the injury.

THE MEDICO-LEGAL ASPECT OF CONCUSSION OF THE SPINE.

BY HERBERT JUDD, M.D.,
OF GALESBURG, ILL.

The facts stated in this paper are drawn solely from my own experience as a surgeon—being cases resulting from or suggested to the patient by accidents; cases in which all objective signs of injury, if any ever existed, had passed away; cases in which the question of supposed or alleged concussion of the spine were under observation from a medico-legal aspect; cases in which compensation for personal injury was sought. In bringing this paper to your notice I do so with a feeling somewhat of duty. It is plainly evident to all thinking, practical surgeons that the question of the concussion of the spinal cord, if such a disease can exist, has become a matter of *business* interest—a business transaction in which the extent of the disease or injury is to be determined in the currency of the country. I say this, be-

²⁵Injuries to the Spine and Spinal Cord, by *Herbert W. Page*, F.R.C.S. Second Edition. London, 1885, p. 203, who says: "Happily the record of cases which we have been able to collect, is conclusive that recovery is usually very complete and the patient able to resume his occupation and carry on his business as well as he did before being injured."

See also, *Dana*, New York Medical Record, November 21, 1884, page 617.

cause of my experience during the last twenty years, I have found but two cases of alleged concussion of the spinal cord, except those resulting from accidents caused by actual or constructive negligence of others, and where, if an injury existed, there was an opportunity to recover compensation in money. This is the history of all, or nearly all, the reported cases, and, as stated by Erichsen, "the consideration of these cases from a medico-legal point of view is a matter of the greatest importance by reason of the difficulties with which they are surrounded and the obscurity in which they are enveloped."

It is demanded by the honest business interests of the country, by cities, transportation, mining and manufacturing companies and by all employers of laborers, that the subject of spinal concussion receive the most thorough attention at our hands. If we do not expose the cheats and frauds, and protect the deserving claimant, who can do so? That cities and corporations are robbed of vast sums of money yearly by malingerers, aided by unscrupulous legal talent, and by ignorant or dishonest surgeons we all know to be true. This subject has reached this disagreeable status. A person can claim to be injured in a collision of trains, or by other accident, no objective symptoms or signs can be discovered, nor upon close examination found. Nevertheless, such person never fails to find abundant medical testimony, and the assistance of friends which with the required legal talent, will be sufficient to successfully prosecute a suit. Especially is this true when the defendant is a corporation. Such cases can be and are based upon, and carried to the end upon only a few vague subjective symptoms, every one of which depends alone upon the word of the claimant who seeks damages.

I make these statements, not as a partisan, not as a corporation surgeon, but assert them as truths determined by my own personal experiences in cases in which I have been interested as

the attending physician from the choice of the patient, in some of which the patient hoped to secure my aid in collecting damages. In some of these cases I have been sorely tried, and, I confess, for a time deceived and misled, in trying to determine whether or not any injury to the spine existed. Some of these patients, where lapse of time had proved conclusively that they had received no injury, had always been considered good neighbors, fair citizens and reasonably honest men. How, then, can we account for such cases? Until the statutes of the various States were enacted, favorable to such claimants, and the laws of fellow servants practically abrogated, symptoms were perhaps seldom deliberately and purposely manufactured, but we all know that patients are apt to greatly exaggerate their complaints. This is no doubt done in many cases unconsciously. In cases of this kind, surgeons and physicians are very liable to be deceived and imposed upon, and made the tools of designing, unscrupulous men, if not well schooled in reading character and determining motives. Definite opinions of imposture in many cases must be non-medical. We may reasonably suspect imposture where there is no organic disease, and where there is obvious motive or money consideration for deception. We might perhaps remain quiet and permit our patients and neighbors to rob corporations on the ground that it does not concern us, just as we take no active part in enforcing the criminal laws of our States for the reason that we are not charged with that duty. But when we find such an increase in imaginary diseases, and find members of our own profession deceived, or deliberately aiding these malingerers, it is time for us to protest as a class. But this is not all. The facility with which damages are collected from corporations is breeding a large class of dishonest persons. It is infectious; men grow more and more to disregard the obligation of an oath. The government itself is a victim; patriotism and sentiment aid. All this tends to demoralize

society, and to wrong the honest claimants for damages or for pensions.

Railroad attorneys inform me that it is now their custom to take the names and address of every passenger on a train that has met with any serious accident, because their experience is that at least one-half of the passengers who receive no injury will, before claims are barred by statutes of limitation, bring suit, and claim concussion of the spinal cord. They learn that those who receive trifling injuries recover large sums, and then comes the temptation to extort money, because they ran the same risk as those who were injured, and they quiet their consciences by assuming that although uninjured the railroad company ought to be made to pay for putting them in jeopardy. In some of these cases there may have been trivial injury, and then the conscience of the patient is somewhat relieved and he finds excuse for deception, and the temptation is so great that few seem to have sufficient moral courage to resist. Many a man who had previously had no public stain upon his character has yielded to the great temptation. Can we not do something to save these men from themselves, and to save our professional brethren from temptation, and from becoming the victims of unscrupulous malingerers?

It is no pleasant task for me to bring cases before you, but in doing so I cannot be charged with being partisan, or with having any desire to prevent any honest claimant from securing just and full compensation for all actual injuries sustained through the fault or misconduct of another. Several years ago I withdrew from all connection with the railroad company I had for some years been connected with.

The knowledge I have sought and which I think I have gained in connection with cases of alleged concussion of the spinal cord and other cases of malingering, forbids me from remaining silent, especially when I see that the tendency of such pretended injuries or disease is to lower the

standard of the medical profession, and to cause the people who see the results of these cases after the money consideration has been paid, to lose faith in the honesty and integrity, or in the skill and knowledge of physicians. I append statements of a few cases that have come under my observations; cases followed by me carefully after judgments were paid or claims settled, and in which recovery was complete in a surprisingly short space of time, without the aid of surgeons or physicians. Such cases have of recent years become so common that the medical profession is brought into ridicule, and it is not rare that intelligent men of a community assail us with the jocular information that railroad officials with no knowledge of medicine or surgery, succeed in producing speedy and permanent cures with money, where our skill and care produced no improvement in the patient.

It is said, and it is probably true, that more people are injured every year by riding in carriages and by farm work than by railroads. Yet injuries that are pure accidents, or injuries where a corporation of some character is not at fault, never result in concussion of the spinal cord. And where injuries occur through accident, for which no liability can attach, we find no malingerers.

Cases 1 and 2.—May 10, 1889, I was called to see Mr. and Mrs. C. G., aged respectively 62 and 63 years. They had been riding in a spring wagon; the horses were frightened by cars and ran away, throwing the occupants out. There were no visible wounds or fractures, but the patients were suffering from shock. I surrounded them with blankets and jugs of hot water, and after four hours of rest, sent them to their home five miles distant. These people were disciples of Hahnemann, and the next day sent for their family physician, and in a short time concussion of the spine was alleged in both cases. Damages were paid. The man is still living and in average health for one of so great an age. The

woman was alive and in good health three years ago.

Case 3.—E. H. H. was walking on a sidewalk and fell into a pit eighteen inches deep, extending from a basement window. I saw him a few days afterwards. His thumb was swollen, and that was the sole objective symptom. The patient at once talked of the amount of damages he could recover, and complained of his back. This man was a hanger-on about the courts, and had some ideas as to how to proceed, and his subjective symptoms were in the line of his desire to recover a judgment. This case was properly attended by a skilled surgeon and physician, a man who stood above reproach. Through his care and *warning* the spine recovered, although the patient's friends asserted positively that he suffered severely from concussion of the spinal cord, and other alleged doctors were called to examine the patient. The physician in charge became disgusted with the malingering and abandoned the case, and through fear of his testimony, no doubt, the concussion theory was abandoned, and the thumb grew worse. The thumb and hand were firmly bandaged, until there appeared to be permanent contraction and disfigurement. Suit was brought against the city, and good legal talent was employed, for lawyers as well as doctors can be found to work in such cases for a consideration. The city was mulcted several thousand dollars, although competent and reputable physicians testified that the sprained thumb would have recovered in a short time without treatment, if it had been left alone and not bound and poulticed. Within one month after the judgment was paid, the man, to the disgust of his friends, was at work on his bench as any shoemaker should be, and the recovery was complete. This case would have gone through the courts as an aristocratic case of concussion, instead of a plebian case of a sore thumb, had not the honorable physician who first attended the case stood in the way.

Case 4.—Concussion of the spine—so-called

and treated by two reputable surgeons. Liability conceded by a railroad company. Damages estimated on the basis of permanent injury and the presumption that the man could never walk again. A complete book case. A large sum of money was paid, and a few days thereafter the man *walked* to the cars in the night time and left the State. The case was as follows: The claimant was an engineer. In making a rapid switch a rail was broken, and the engine left the track and tipped over. The fireman was killed and the engineer thrown out and stunned and bruised. His family physician was called, and he in turn called a surgeon, who justly ranks high. There were no objective symptoms. The man was apparently scared. There had been no shock. The case gradually grew to be a case of concussion of the spine, a "book case." In justice to my esteemed medical brothers who attended the case, I will say, that under the circumstances, and with death resulting to the companion of the patient, other surgeons would have been likely at that date to have been deceived. I rejoice at my escape from this case, for I sadly fear that with the experience I then had I should have believed the patient's statement and symptoms related. The recovery in this case was complete, and the man last heard from, some five years after the accident, was in robust health.

Case 5.—F. P., age 18, brakeman, habits questionable, health undermined, inclined to consumption, was on top of box car in a train under way. Head end collision. P. jumped from train and fell some distance from the track; when found he lay in a depression in the ground on his back, with his back across a railroad tie. He was brought a distance of 23 miles to his home. He was met at the station on his arrival by the writer, four hours after the accident, and was carried home on a hand stretcher. When met at the station reaction was progressing naturally. He had received a great shock. Two hours after seeing the patient at the station, I again saw him,

and being the attending physician of his father's family, and the residence being a short distance from my office, I saw him often. In this I made a mistake. There were no objective symptoms. The subjective symptoms were pain in the back over the dorsal vertebra. My directions in the first instance were to keep him warm and let him alone until I again called. The pain being apparently so great, I called to my assistance a very painstaking physician. We carefully examined the patient and found curvature of the spine, bold and distinct. We abandoned further examination at that time and regarded the case as hopeless. To our great surprise, however, during a later visit the same day we found reaction fully established, with no complaint of pain. We then again examined the back. The deformity of the spine was decidedly marked, but there was no tenderness upon pressure. We made no further examination for several days, and in the meantime I described to his mother the condition of the spine as we had observed it, and our fears of a serious injury and fatal result. This was my second mistake in this case. The information I communicated to the mother, to my surprise, did not greatly disturb her, and here my suspicions were aroused. I had long been her attending physician, and the patient was her son, and yet my opinion of her son's condition was received quite calmly. From this time on the curvature of the spine became in the minds of the family more pronounced, and the money question began to be considered. To protect myself and guard against an outrage being committed, and for the purpose of saving the reputation of the family I had so long attended, I procured skilled help and made a correct plaster cast of the whole back. I had seen lawyer's tracks. Secret meetings had been held in the back parlor, as was reported to me. I was quietly interviewed and informed that the case was all clear if I was all right. The whole family asserted to me that prior to the accident no deformity of the back had existed. I was

in trouble, and consulted with the physician whom I had called in consultation, and we took such steps as we could to save ourselves from being either parties to a contemplated robbery, or from wronging the family that had trusted me. A brother of the patient, a bright boy, had some years before been my office boy. He was absent from home at the time of the accident. When he returned he told me that his brother's back had been that way since he was a little fellow.

I devoted my labors after this to getting my patient out of bed and on to his feet, but he insisted upon the necessity of crutches. I could do no more; the spine grew worse; suit was brought because a fair and, in truth, a generous offer made by the railroad company was indignantly rejected. Foreign surgeons were called to examine the patient preparatory to testifying. I knew the case was one of malingering, and so informed the attorney of the railroad company. The surgeons who had no knowledge of the case, except as related to them by the patient and family, would readily have testified to the permanent injury and that the accident was the cause. When the case was set for trial I was so beset with difficulties that I was compelled to exhibit the cast of the back, and to urge that surgeons for the railroad company might make an examination. This was done. It is sufficient to say that Dr. J. Adams Allen cured the case within the half hour before Court convened. So thorough was the cure that a reasonable sum for the actual injury, less than the amount previously offered, was greedily accepted. On the evening of the same day the crutches were abandoned, and the afflicted spine was supporting the body of an intoxicated man.

This, gentlemen, is a true history of a case that occurred in a family that had my confidence and respect. It cost me many gray hairs.

Case 6.—A middle-aged man of nervous temperament, of health feeble for years, tripped and fell from a defective sidewalk. Accident happened in front of his own house. He immediately took

to his bed. A reputable physician of long experience in general practice was called. The patient remained in bed—as was supposed—for some months, when suit against the City was brought, based upon permanent injury to the back, on account of spinal concussion. The case was on trial with the plaintiff in bed, unable to attend, as was alleged, when the writer and another physician were solicited by the plaintiff's attorney, who had faith in the honesty of the case, in order to further the ends of justice, to go and examine the plaintiff, and testify to his crippled condition. We found the man in bed, and evidently prepared for our coming. Not the slightest objective symptom could be found, but the subjective symptoms were perfectly in accord with all the recorded book cases. With careful effort we got the man out of bed. The imperfect walk, the peculiarity of gait and carriage of body, were just what a student would expect to find after having freshly read these cases and never before having seen one.

I am not naturally suspicious. I want to have faith in mankind, I want to be just, but there were many things which I cannot fully explain; the manner of the man, his guarded language, his suspicious glances, that caused me to suspect that we were being misled, and being entangled in the trap set by designing lawyers, or credulous and ignorant physicians. I informed the plaintiff's attorney of my suspicion, which after some tests had become a conviction, of the plaintiff's dishonesty in this case. I was nevertheless called to testify, because, as I was informed, my silence after it was known that I had made the examination, would be more damaging than my negative testimony. I testified substantially that I had no positive means of knowing or satisfying any one else that the man was simulating all his symptoms, that I had never before had cause to suspect him of dishonest practices, that there were no objective symptoms or signs of injury, that the whole case depended upon the symptoms which could be simulated, and upon the state-

ments of the patient, and upon these alone. I was asked by the attorney for the City to answer that had the accident happened within his own dooryard, or where no one would have been liable, would the symptoms have been the same? I answered, "No, I certainly think not." This testimony was, however, "ruled out" by the Court. The surgeon who made the examination with me corroborated my opinion. I did not hear the testimony of the attending physician, but was informed that he thought it improbable that all the symptoms could be manufactured; that in all such cases the physician had to rely upon the statements of the patient, and that he could not be properly treated if symptoms stated were ignored, etc. Judgment was given in favor of the cripple, and the money paid. A few weeks afterwards I was much surprised—or would have been had I believed the man's story—to see this same plaintiff riding about the city; and about five months after the trial I ought to have been again surprised beyond belief, I suppose, to see this same man, permanently crippled from concussion of the spine, put a heavy stove into a lumber wagon. To be certain that I was not mistaken in the person I went to him and shook hands with him. He is not now a strong man, and was not before his fall on the sidewalk, but, knowing him well both before and after the fall, I can state positively that he is in better health and in better physical condition than before the accident. It is certainly very unpleasant for me to record this case. I have no personal ill will against the man. He was the victim of his cupidity, and only followed the precedent set by many other "honorable men." I was recently called to his fireside to treat a member of his family.

Case 7.—A young married man, jeweler by trade, had occasion to go hurriedly to a railroad station. Unknown to this man, as he claimed, the station platform had been partially removed for repairs. The sidewalk, which was in place, had formerly terminated in the platform. The

removal of the platform left the end of the sidewalk about 14 inches above the level ground. The man stepped off the end of the walk, and fell to the ground. This is the history of the accident given by the patient—no one else witnessed it. He got up, went into the telegraph office, sent a message and returned home. The case was brought to my knowledge some weeks afterwards by the attorney of the railroad company, who desired me to examine the man together with the doctor in charge. At my suggestion, permission was granted by the attorney for the claimant to call a third physician. I called Dr. H., an old practitioner, and a man beyond reproach professionally and otherwise. I found the history of the case as stated above, and that permanent injury was claimed; that suit had been brought in one County and that the attorney who brought the suit had abandoned the case because he believed the man dishonest in his pretenses of injury. This put us on the watch and compelled a critical examination. The desertion of one attorney did not deter the claimant, nor seriously discourage him. Lawyers are no more virtuous than physicians, and a speculative lawyer was soon found ready to take the case, and a new suit was brought in another County. The physician who had been treating the case was employed specially because of a reputation he had previously acquired as an expert witness for the claimants in spinal concussion suits. The attorneys representing both plaintiff and defendant were present. This was a mistake, and was chargeable to me. No proper or satisfactory examination could be made under the circumstances. The case presented in all its aspects the appearance of chronic disease, or permanent injury; the general appearance of the patient was bad, suggesting rheumatism. Aside from this there were no objective symptoms. I stated that if his present condition was due to the fall, he was certainly injured. He finally admitted, because it was susceptible of proof, that he had repeatedly suffered

from rheumatism for some years. It did not seem possible to Dr. H. and myself that this person could be in his present condition from any injury a person could sustain from the accident related. The doctor in charge of the patient and his claim stated that it was a case of permanent injury to the back. The case came to trial, concussion of the spinal cord was the plea. It was shown by his own testimony how much he had suffered and was suffering. The doctor in charge either dishonestly or ignorantly corroborated his patient, although admitting that no medicine had been used. Some of the most candid and intelligent surgeons of the State of Illinois, all members of this Association, were called by the railroad company as witnesses. The track gone over in this case was the same old beaten path, the only road possible to travel, that is the man's own word and subjective symptoms. Book cases were rehearsed to the jury of concussion of this spinal cord by a professor of the Physio-Medical College—formerly of Cincinnati—the pale face of the rheumatic patient, the prejudice of a jury in favor of a claimant and against a corporation, succeeded, and damages were awarded to a large sum. After payment of the judgment, the patient recovered from all trouble, except rheumatism, so rapidly as to abash and disgust the innocent jurors and sympathizing friends, and finally taunts and charges of dishonesty became so numerous that the claimant felt it safer to emigrate from the County, and the doctor, who was also a druggist, has removed, but before going, instead of pleading ignorance to the discredit of his skill as a physician, admitted that it was a little scheme to get even with a soulless corporation. The claimant had not sustained the slightest injury; indeed, it is believed by the citizens of the village that he did not even fall from the sidewalk.

I will not burden you with reference to any further cases. It would be but a repetition. You have no doubt had similar cases. I have been unfortunate, it may be, in having a number of

other cases brought to my knowledge, a number in excess of what might seem usual; but I have no doubt no greater number or kind, as regards the subject of concussion of the spinal cord considered in its medico-legal aspect, than have come under the observation, in the practice of a large number of those present.

If a young man can begin life with the truth visibly laid before him, and be warned of the snares set for him, and be helped to avoid deception, some of the obstacles to his honorable fame may be removed, and his path be made easier. If the young men in the profession could realize that cheats and frauds are not rare, much good might be accomplished and less harm done.

I must certainly question if there be such a disorder or injury as concussion of the spinal cord, as some of the books tell us, or describe it. I have certainly been a hard worker after the truth in this matter, and have not exaggerated the cases I have reported, and have withheld reports of other now notorious cases of pure fraud and malingering, in which honest but credulous physicians were misled, deceived, and their reputations injured.

I trust that members of the profession more skilled with the pen than I am, more capable of expressing their ideas to others, will give the subject careful study, and give their views to the public. To learn the truth these cases must be followed and observed, not only before judgments are paid, but for months afterwards. I would be happier if I could be convinced or could convince myself that I have been mistaken in all these cases, and that the remarkable cures effected apparently by juries, were really cures effected by the kindness of Divine Providence, or by the labors of Christian Scientists.

If in my awkward way, and by my crude language I shall succeed in creating enough interest to cause others to be on their guard and to study this class of cases when damage suits are brought, I shall be content.

DISCUSSION.

DR. WM. BRODIE, of Detroit, Mich., cited two cases, in one of which his testimony was for the plaintiff; in the other, against. The jury gave the plaintiff heavy damages in both cases. Conclusions: Immediately after a man is hurt the railroad surgeon should advise the company to settle, for if injury of spinal cord has occurred the patient will continue to give evidence of his injury; and if not, the damages received from the company will prove immediate cure, and thus demonstrate that no injury had taken place. Juries cannot be made to see the difference. It is only necessary that the defence be a rich corporation. He also cited a case at Cobourg, Ontario, wherein the G. T. R. W. was defendant. The injured man recovered in less than ten days after the verdict in his favor and was married. Has been in perfect health since, although he played paralyzed for near two years, with loss of sensation in his extremities. Such perfect control did he have that neither needles nor electricity could make any observable impression upon him when applied even without his direct knowledge. Of course he was aware that he was being put to some test, and his will controlled.

DR. B. A. WATSON, of Jersey City, N. J.: Spinal concussions are not so frequent as would seem from court decisions. I have observed as the most frequent injuries following railroad accidents: 1. Hæmorrhagic infarction in lungs. 2. Lacerations of liver, spleen, lungs, or kidneys. 3. Rupture of blood vessels and bladder.

DR. CHARLES B. PENROSE, of Philadelphia, said: I think that we are all in accord with the principles expressed in the papers which we have heard to-day, and we protest against the robbery of corporations and the consequent discredit brought on our profession by supposed victims of spinal concussion.

The rarity of any serious injury to the spinal

cord, unaccompanied by injury to, or lesion of, the surrounding bony or ligamentous structures, is shown by the records of large surgical hospitals, where simple spinal concussion analogous to transient cerebral concussion is exceedingly rare, if not altogether unknown.

In the Pennsylvania Hospital, where there are treated yearly about 700 cases of fracture, luxation, sprain and contusion of sufficient gravity to demand in-door hospital treatment, simple spinal concussion is one of the rarest conditions met with. And yet these injuries are produced by falls, blows and collisions, which must cause more or less jarring of the whole body, besides the local fracture or contusion, or sprain for which the patient is admitted.

I am familiar with the details, and have examined the specimens of the very interesting case of spinal concussion referred to by Prof. Smith, as that of a sailor admitted to the Pennsylvania Hospital, who had been thrown violently upon the nape of his neck. The autopsy was made most carefully with the special object in view of determining the existence of any injury to the bones or ligaments of the spinal column, as in such cases there is always a probability that an unrecognized fracture is present, or that dislocation has taken place and been immediately reduced, so that no deformity is afterwards apparent. But in this man no fracture of bone or laceration of ligaments was found. Nor does it appear, from the nature of the accident, that any sharp flexure had occurred and produced undue tension upon the cord; nor was there any indication of hæmorrhage from the vessels of the cord or of the membranes. It seems, therefore, to be a simple case of injury or concussion and subsequent degeneration of the cord, produced by direct violence without any fracture or laceration of the surrounding structures.

Women at the menopause are frequent malingerers of spinal concussion, or spinal shock, and their nervous symptoms sometimes really deceive

themselves and friends, being falsely attributed to some more or less severe injury coincident with the real physiological cause of their trouble.

I have examined two such cases, where, in court, trifling injuries were affirmed to have caused spinal concussion, and were held responsible for all the hystero-neuroses of the menopause. In one case the plaintiff was non-suited, in the other a compromise was effected. In both women all symptoms of spinal concussion probably disappeared as soon as the menopause was over.

An important point which Prof. Smith has mentioned, is the impossibility of giving a certain prognosis with regard to permanent disability after spinal injury.

An exceedingly interesting case, where recovery of muscular power occurred after prolonged paralysis from a very severe spinal injury and probable fracture, came under my observation about two years ago. The man had been a soldier, and in the battle of Cross-Keys had been struck by a bullet on the cartridge belt and had fallen backward from a height, upon the buttocks. He was not wounded by the bullet; but his back was so injured by the fall that he was immediately paralyzed and he was obliged to lay for three years on a water-bed, with paralysis of the legs and incontinence of urine and fæces.

He afterwards regained muscular power sufficiently to lead the laborious life of a peddler, tramping, with his pack for twenty years subsequently, through Pennsylvania and New York. The only mark of injury now apparent is a slight prominence of the lower dorsal vertebra. He has never recovered control over the bladder and rectum, or sensation in the skin of the buttocks on the posterior aspect of the thighs.

DR. J. H. MURPHY, of St. Paul, Minn., said: Erichsen has cost the railroads thousands of dollars. He cited several cases of malingering.

DR. WM. H. PANCOAST, of Philadelphia, said: The question under discussion has two heads.

First, is there such an injury as concussion of the spine, and are there malingerers who assume the symptoms. That there can be cases of concussion of the spine followed by serious consequences, I firmly believe, for I have seen them. I have seen cases where a violent concussion in a railway accident has so affected the contents of the spinal canal as to cause effusions, or such alterations of the membranes of the cord or of the cord itself, as to be followed by paralysis more or less complete. Many members of this Section of Surgery and Anatomy must, in the course of their lives, from mis-steps or other accidents, have recognized the force and painful effects of concussion. I have within the past few weeks been engaged in a medico-legal case, where a delicate lady, the wife of a physician engaged in a large and active practice, was thrown from a carriage in which they were both driving. A careless coachman driving a heavier carriage ran into them, and the collision threw her to the ground and against a wheel, with such violence that she became insensible. She has remained an invalid ever since, with marked symptoms of paralysis on one side. In neither of these cases was there hysteria or malingering.

There are malingerers, and we must be on our guard against them, and I have such faith in the honor of the members of our regular profession as a class, that I do not believe they would be parties to such a deception. I have been called as an expert in several such cases, and have sometimes settled the medico-legal questions in my office to the satisfaction of both sides. I feel assured that this learned body recognizes the existence of such an injury as concussion of the spine, and also that while the great railroads who do so much for the benefit of the country, should be protected from suits inspired by fraud and ignorance, that the great public should also have protection. I think that if corporations would give fair compensation for injuries received at their hands, through accident or the careless-

ness of their employés, and not insist that such injury should be proved to be permanent, that a cause exciting to fraud or malingering will be removed.

I give credit to the corporation surgeons of desiring to be honest, and giving a truthful scientific diagnosis from their standpoint; then why should not we also recognize the statements of the surgeon of the injured, as being inspired by the same motive, even if some one may occasionally be deceived by an ingenious and artful malingerer.

From my experience I think that very many railway injuries can be satisfactory adjudicated and the sufferers properly compensated by the judicious surgeon acting as mediator between the opposing lawyers, to the honorable satisfaction of both parties.

